Prevalence and Determining Factors related to Depression Among Adult Women in Korea

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Purpose. Korean women are likely to experience symptoms of depression, possibly due to socially fixed limitations on the roles that Korean women are expected to perform. Also if a Korean woman experinces negative relationship problem or stress in her family, she would feel responsible, which will worsen her depression. Nonetheless, much of the research on depression among Korean women has focused on menopausal women. This study aims to understand the depression of Korean women to provide fundamental data to develop nursing intervention method for promoting women's health.

Methods. The present investigation assessed the prevalence and correlates of depression in a large sample of Korean women, aged 18 or older, from the general population. With a probability sample of 3312 women drawn from two areas in Korea, a survey, which contains the Center for Epidemiological Studies Depression Scale (CES-D) and background, was completed.

Results. According to CES-D classification criteria, 36.5% of the women in the sample displayed either no depression or mild depression, 55.6% exhibited moderate depression, and 7.8% manifested severe depression. Significant bivariate relationships were observed between depression and each measured background variable except alcohol use. Logistic regression analysis indicated that the strongest combination of predictors of depression included income, menopausal, and marital status.

Conclusion. The data support the premise that Korean women disproportionately experience elevated levels of depression. Consistent with the theory, depression may be related to social pressures to conform to the traditional roles. The study suggests the need for further research, primary prevention activities, and increased access to treatment.

Key Words: Depression, Social roles, Cultural stress, Menopause

INTRODUCTION

It has been estimated that $20-25\%$ of adult women in the United States suffer from depression (Jacqueline & Lawrence,1998). Little prior study has reported the incidence of depression among the general population of adult women in Korea, but a study employing the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977) shows that 33.1% of Korean mid-aged women should be classified as moderately to severely depressed (Shin, 1999). Thus, it appears to indicate that Korean women experience a greater risk of depression than previously reported. Woman with higher education, income and support from the spouse displayed lower levels of depression (Kim, 1996). In other studies, age, education level, income, and leisure activities were all related to depression among middle-aged women (Lee & Choi, 1999).

It has been argued that higher levels of depression are

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expected in Korean women, due to that country's pronounced patriarchal social system holding the expectation that women should perform traditional female roles, such as that of homemaker and mother. Furthermore, Korean women in the workplace typically experience gender-based discrimination in salary and promotion (Nam & Choi, 2001). Moreover, the recent Korean economic crisis contributed greatly to depression among women, since many husbands, who were the primary breadwinners in their families, either lost their jobs or experienced a dramatic decrease in income, which resulted in increased economic stress and family conflict (Han, 1999).

Relatively little empirical research has been conducted on the relevant factors of depression among Korean women. Moreover, the research tended to focus mainly on the health problems of menopausal women (Kwon et al., 1996; Cho et al., 1997). Accordingly, the study reported here was undertaken to identify correlates of depression within the general population of adult women in Korea.

MATERIALS AND METHODS

Study Population

The study subjects were Korean adults over the age of 18. The Ansan Health Study drew population-based samples of 4700 male and female adults living in Ansan and Kyunggido, while the Ewha Womens Health Evaluation Program drew a stratified probability sample of 1800 adult females from Seoul and the surrounding metropolitan area.

Subjects from Ansan area were approached in their homes, where trained researchers who had solicited their participation obtained the necessary information. The participation rate in the Ansan sample was 90.9%, yielding a sample of 4273, including 1921 women. All cases in this sample were usable. Those in Seoul were also visited in their homes, where questionnaires were distributed, which were to be mailed back by the participants. The response rate in the Seoul sample was 84.3%, yielding a total sample of 1518. However, 127 of these returned questionnaires were unusable, so the final Seoul sample ended up at 1391. Thus, the number of women in the total sample was 3312.

Survey Instrument

The survey instrument consisted of the CES-D (Radloff, 1977) and an 11-item background questionnaire designed to measure possible correlates of depression. The CES-D is a 20-item scale that measures the degree of depressive symptoms experienced by respondents, including depressed mood, feelings of guilt and worthlessness, feelings of helplessness and hopelessness, loss of appetite, sleep disturbance, and psychomotor retardation. The CES-D employs a four-point Likert-type response format with response options ranging from rarely or none of the time to most or all of the time. Radloff reported alpha coefficients, ranging from 0.84 to 0.90 for several samples from the general adult population and several psychiatric patient samples (Radloff, 1977). With respect to validity, Radloff reported significant differences in CES-D scores between samples from the general adult population and psychiatric patient samples and significant correlations between CES-D scores and the occurrence of stressful life events.

We translated the CES-D into Korean for this study, then it was backtranslated into English to ensure the accuracy of the translation by English professor. The Cronbach coefficient alpha of this study was 0.87.

The background questionnaire contained items assessing age, level of education, marital and employment status, monthly income, use of alcohol and tobacco, self-rated general health, present menopausal status, and current sexual activity.

Data Analysis

To describe the nature of the depression represented in the sample, the distribution of CES-D scores was collapsed into three categories: (1) none to mild (CES-D scores from 0 to 10); (2) moderate (from 11 to 23); and (3) severe (24 or higher). In order to determine the significance of bivariate relationships between depression and the predictors, t-tests or analyses of variance were applied to the uncollapsed CES-D scores. In order to determine the best combination of predictors to explain variability in depression, stepwise logistic regression was employed.

RESULTS

CES-D depression scores ranged from 0 to 54, with a mean of 13.2. This mean falls near the low end of the moderate depression range. The sample contained 1212 women (36.5%) categorized as not depressed or mildly depressed. There were 1841 women (55.6%) who fell

into the moderately depressed range of scores and 259 women (7.8%) who fell into the severely depressed range of scores of the CES-D.

Table 1 presents frequency distributions of the predictor variables and breakdowns of CES-D scores by each predictor. In addition, the table presents the results of t-tests and ANOVAs , which was used to determine the significance of the relationships between CES-D scores and each of the predictors.

Referring first to frequency distributions, we noted that there was substantial variability in all of the predictors. With respect to a general description of the sample, the modal category with respect to age was the 31- to 40-year-old category and the years of education was 10 to 12 years. The majority of respondents were married and employed and the modal income category was US$850 to US$1700 per month (US$1.00 = ₩ 1200 Korea). The sample was evenly divided between those who did and did not report using alcohol. Few respondents reported smoking. The modal response on self-rated health was moderate, but nearly as many respondents described themselves as unhealthy. The majority of the respondents were premenopausal and sexually active.

With respect to group differences in depression, the t-tests and ANOVAs in Tables 1 and 2 indicate highly significant relationships between depression and all the predictors except alcohol use.

Depression was significantly related to respondent age ($F_{6, 3305}$=10.40, P < 0.0001). The mean CES-D score was the lowest among those in the 31- to 40-year-old group (12.3). The highest means were in the three oldest age groups. Thus, it is clear that depression is related positively to respondent age.The significant relationship between depression and education level ($F_{5, 3306}$=15.16, P < 0.0001) is negative, with the mean CES-D score decreasing with each successively higher educational level. Depression was also related significantly to marital status ($F_{3, 3308}$=24.57, P < 0.001). The mean depression score was the lowest among the married group (12.5). Mean depression scores were relatively high among those who were divorced or separated (16.5) and among widows (15.3).Depression was related significantly to employment status (t_{3310}=−2.43, P=0.0151). Employed women had a slightly lower mean score on the CES-D (13.0) than women who were not employed (13.6). Also income was related significantly to depression ($F_{3, 3308}$= 48.26, P < 0.0001) as the CES-D mean scores declined steadily as monthly income increased. Depression was

not related significantly to the use of alcohol, but it was related significantly to the use of tobacco (t_{3283}=3.51, P = 0.0006). The mean CES-D score was higher among those who smoked (15.0) than among those who did not smoke (13.0).There was also a significant relationship between depression and self-rated general health ($F_{4, 3291}$ =9.94, P < 0.0001). The mean depression score was highest among those who considered themselves to be very unhealthy (14.1) whereas the score was lower among those who rated themselves as healthy (mean= 11.8) or very healthy (mean=12.6). Menopausal status

Table 1. CES-D Scores Broken Down by Background Characteristic Predictors

Predictor	Value	Mean (SD)	F or t	p-value
Age (years)	18−30	13.36 (6.93)	10.40	<0.0001
	31−40	12.30 (6.29)		
	41−50	12.78 (7.14)		
	51−60	13.09 (5.55)		
	61−70	15.16 (9.29)		
	71−80	15.36 (7.93)		
	>80	14.73 (7.02)		
Education (years)	0	15.91 (8.49)	15.16	<0.0001
	6	15.05 (7.81)		
	9	13.09 (5.84)		
	12	12.87 (7.45)		
	16	12.24 (6.14)		
	>16	11.92 (5.67)		
Marriage	Not married	13.97 (6.80)	24.57	<0.0001
	Married	12.47 (6.66)		
	Separated or divorced	16.51 (7.57)		
	Widowed	15.34 (8.58)		
Employed	Yes	12.98 (7.06)	−2.43	0.0151
	No	13.63 (6.79)		
Income (US$/month)	<850	15.72 (8.52)	48.26	<0.0001
	850−1700	12.82 (6.67)		
	1701−2550	12.18 (5.82)		
	>2550	11.7 (5.87)		
Alcohol Use	Yes	13.34 (6.85)	1.28	0.1998
	No	13.03 (7.13)		
Smoke	Yes	14.98 (6.94)	3.51	0.0006
	No	13.03 (6.99)		
Health Condition	Very unhealthy	14.11 (8.17)	9.94	<0.0001
	Unhealthy	13.83 (7.40)		
	Moderate	13.18 (6.28)		
	Healthy	11.76 (7.30)		
	Very healthy	12.60 (6.14)		
Menopause Status	Premenapause	12.40 (6.43)	31.94	<0.0001
	Menopause	13.98 (7.24)		
	Postmenopause	14.63 (7.95)		
Sexually Active	Yes	12.39 (6.67)	−7.78	<0.001
	No	14.31 (6.95)		

was also related to depression ($F_{2, 3309}$=31.94, P < 0.0001). Depression was relatively low among pre-menopausal women (mean=12.4) and it was higher among those going through menopause (mean=14.0) and the highest among postmenopausal women (mean = 14.6). Finally, depression was related to sexual activity (t_{3266}=−7.78, P < 0.0001). The mean CES-D score was lower among women who were sexually active (12.4) than among those who were not sexually active (14.3).

It should be noted that the extremely small P-values that are reported here are largely a function of the large sample employed in the present study, which renders each of the statistical tests very powerful. In some instances the mean differences indicated in Table 1 are substantial (e.g., education and income), but in other cases the magnitudes of the mean differences is modest (e.g., employment status). Thus, the reported bivariate relationships are highly reliable, but not always large in size.

Table 3 presents the results of the stepwise multiple logistic regression analysis carried out to identify the most efficient set of predictors to use in explaining variability

Table 2. Difference in the Degree of Depression According to General Characteristics (N = 3312)

		None or Mild n = 1212 (36.5)[1]	Moderate n = 1841 (55.6)	Severe n = 259 (7.8)	p-value[2]
Age (years)	18−30	332 (37.99)	467 (53.43)	75 (8.58)	< 0.0001
	31−40	433 (39.65)	597 (54.67)	62 (5.68)	
	41−50	240 (37.74)	353 (55.50)	43 (6.76)	
	51−60	55 (26.83)	138 (67.32)	12 (5.85)	
	61−70	66 (32.04)	109 (52.91)	31 (15.05)	
	71−80	65 (30.81)	117 (55.45)	29 (13.74)	
	>80	21 (23.86)	60 (68.18)	7 (7.95)	
Education (years)	0	68 (29.31)	128 (55.17)	36 (15.52)	< 0.0001
	6	73 (25.52)	183 (63.99)	30 (10.49)	
	9	194 (27.02)	478 (66.57)	46 (6.41)	
	12	511 (40.91)	638 (51.08)	100 (8.01)	
	16	331 (44.07)	377 (50.20)	43 (5.73)	
	>16	35 (46.05)	37 (48.68)	4 (5.26)	
Marriage	Not married	244 (30.96)	469 (59.52)	75 (9.52)	< 0.0001
	Married	863 (40.05)	1158 (53.74)	134 (6.22)	
	Separated or divorced	7 (20.00)	23 (65.71)	5 (14.29)	
	Widowed	98 (29.34)	191 (57.91)	45 (13.47)	
Employed	Yes	938 (38.84)	1290 (53.42)	187 (7.74)	< 0.0001
	No	274 (30.55)	551 (61.43)	72 (8.03)	
Income (US$/month)	< 850	194 (26.04)	439 (58.23)	112 (15.03)	< 0.0001
	850−1700	489 (37.27)	731 (55.72)	92 (7.01)	
	1701−2550	305 (39.82)	425 (55.48)	36 (4.70)	
	>2550	224 (45.81)	246 (50.31)	19 (3.89)	
Alcohol Use	Yes	505 (35.69)	801 (56.61)	109 (7.70)	0.5421
	No	699 (37.36)	1023 (54.68)	149 (7.96)	
Smoke	Yes	37 (21.88)	117 (69.23)	15 (8.88)	0.0002
	No	1168 (37.48)	1707 (54.78)	241 (7.73)	
Health Condition	Very unhealthy	52 (39.39)	66 (50.00)	14 (10.61)	< 0.0001
	Unhealthy	395 (34.23)	648 (56.15)	111 (9.62)	
	Moderate	437 (33.13)	794 (60.20)	88 (6.67)	
	Healthy	311 (47.99)	293 (45.22)	44 (6.79)	
	Very healthy	15 (35.71)	25 (59.52)	2 (4.76)	
Menopause Status	Premenapause	807 (40.01)	1088 (53.94)	122 (6.05)	< 0.0001
	Menopause	192 (32.49)	341 (57.70)	58 (9.81)	
	Postmenopause	213 (30.26)	412 (58.20)	79 (11.22)	
Sexually Active	Yes	782 (40.62)	1023 (53.14)	120 (6.23)	< 0.0001
	No	414 (30.83)	791 (58.90)	138 (10.28)	

[1]Percentages are given in parentheses, [2] Chi-squared test

Table 3. Stepwise Logistic Multiple Regression analysis of CES-D Depression Scores (Adjusted by Age Calsses)

Variables	OR (95% CI)	p-value
Monthly income		
< 850	2.348 (1.752,3.142)	< .0001
850-1700	1	
1701-2550	0.651 (0.436, 0.969)	0.0098
> 2550	0.533 (0.322, 0.881)	0.0018
Menopausal status		
pre-meno period	1	
transition period	1.690 (1.218, 2.344)	0.0133
post-meno period	1.933 (1.423, 2.621)	0.0047
Marital status		
Not married	1.584 (1.180, 2.130)	0.0246
Married	1	
others	2.369 (1.681, 3.344)	0.0002

in depression. In logistic regression, we considered dependent variable dichotomous indicator whether subjects were severely depressed group or not. The data in Table 3 indicate that three predictors made individually significant contributions to the prediction of CES-D depression scores that are adjusted by age class. The result showed that lower salary had an effect on higher prevalence of depressive status. Moreover, menopause subjects reported depressive symptoms more than 1.933 times odds than premenopause ones(p=0.0047). Finally, among marital stauts, divorced, separated, or widowed shbjects showed higher prevalence of depessive symptoms than married (OR=2.346, p=0.0002).

DISCUSSION

The major finding of the present study is the high incidence of depression among Korean women. Based on CES-D criteria, 55.6% of the subjects in the sample were classified as moderately depressed and another 7.8% were classified as severely depressed. These percentages are very high in absolute terms and are clearly higher than the corresponding percentages in other nations, such as the United States (Jacqueline & Lawrence,1998). These findings obviously suggest the need for further studies to identify the sources of such widespread and clinically relevant depression, even as they also indicate a need for both primary depression prevention measures and improved access to treatment. It has been estimated that only 4.7% of women who experience significant psychological distress actually receive appropriate treatment in Korea (Nam & Choi, 1994). The corresponding percentage in the United States has been estimated to be approximately 20% (9). Obviously neither of these figures is acceptable, but the discrepancy in service delivery between Korea and the United States adds even greater urgency to the need to address the problem of widespread depression among Korean women. However, as these criteria were suggested in American studies, there is not any standard for the CES-D in Korea. So the standardization of the CES-D scale measuring the severity of depression in the Korean case is an additional necessary step towards addressing the problem.

Another way of viewing the level of depression among the Korean women in the present study is to examine the mean CES-D score for the entire sample, which equals 13.2. According to CES-D criteria, scores between 11 and 23 represent moderate depression. Thus, it can be said that the typical respondent in the present study is moderately depressed, a fact that that clearly requires the immediate attention of Korean public health policymakers. This is a particularly pressing issue in view of the fact that depression among women often leads to other difficulties, such as hindering women from achieving their life goals, or deriving pleasure from their work and family roles. Moreover, depression is related to employment and family stress, marital discord, and poor psychosocial adjustment in the children whose mothers are depressed.

The second set of noteworthy findings is related to the predictors of depression. Depression tended to be particularly high among women over the age of 60, women possessing six or less years of education, who had monthly incomes under US$850, those who were divorced/separated or widowed, those who indicated that they were not sexually active, and those who classified themselves as unhealthy. These findings are intuitively reasonable and consistent with prior research carried out both in Korea and in other countries. This significant relationship between depression and age is consistent with prior studies (Shin, 1999; Park, 1998) in terms of level of education (Shin, 1992; Park, 1998; Kim,1996; Cho et al, 1999), income (Kim,1996; Kizilary, 1992; Shin, 1994; Park, 1988), marital status (Park, 1998; Cho et al, 1999; Kizilary, 1992), sexual activity (Park, 1988), and self-rated health status (Park, 1998; Woods & Mitchell, 1996). With respect to the last predictor, it should be emphasized that the women in the study sample did not

consider themselves to be exceptionally healthy. Thirty-five percent of the sampled considered themselves unhealthy, and another 4% considered themselves very unhealthy. In contrast, only 19.7% rated themselves as healthy, and only 1.3% felt that they were very healthy. These findings suggest the need for greater access to better health-related services for women in Korea.

Significant relationships were also found between depression and employment status, use of tobacco, and menopausal status. In the case of employment status, the employed women in the sample were somewhat less depressed than those who were unemployed. This finding is consistent with the hypothesis that women who perform the traditional female roles of homemaker and mother tend to be more depressed than those who move beyond social prescriptions to enter the work force (Carr, 1997). In this context, however, it should be pointed out that in this sample 73% of the respondents were employed, which suggests that change is occurring in Korea. However, these findings do not address the question of whether Korean women typically obtain satisfaction and an appropriate sense of reward from their work or, as suggested by Nam and Choi (Nam & Choi, 2001), whether they are restricted to lower level jobs for which they are underpaid. If Nam and Choi's argument is correct, it would help to explain why the mean CES-D difference between the employed and unemployed groups observed in this study was rather small. Working alone may not be sufficient to avoid or alleviate depression; meaningful and rewarding work may be essential. Therefore, further research is required in this area.

The relationship between depression and use of tobacco may well be bidirectional. That is, women who are depressed may use tobacco to self-soothe, but it is also possible that smoking harms one's health to the extent that it leads to depression. Further research would be required to establish the actual causal relationship between these variables.

A similar situation exists with respect to the effect of menopausal status. It may be that aging itself leads to depression as well as to menopause, such that the observed significant relationship between menopause and depression is spurious. Menopause, however, may be viewed as an aspect of aging that involves the loss of the valued feminine attribute of fertility and therefore directly contributes to depression. Here, too, further research is necessary to reveal the nature of any causal relationships.

The present study has limitations that must be addressed in future studies. First, the sample was drawn from two relatively limited geographic areas within Korea, so the results cannot be properly generalized to the nation as a whole. However, the findings obtained with respect to the correlates of depression are very much in line with previous research conducted in Korea and elsewhere, suggesting the probable validity of these findings. Perhaps a more significant limitation lies in the fact that the predictor variables employed in this study were confined to background and demographic characteristics. These are important, of course, but other factors must be considered as well. The occurrence of stressful life events, discrepancies between aspirations and achievements, personal locii of control, satisfaction with one's family life and work, as well as optimism regarding the future are just a few of the factors that can be tentatively seen as predictors of depression. Future studies should endeavor to include additional predictors, as well as develop more comprehensive models for predicting depression among Korean women.

CONCLUSION

This study aims to understand the depression of Korean women to provide fundamental data to develop nursing intervention method for promoting women's health. The study subjects were 3312 Korean women over the age of 18 who are currently living in Ansan, Kyunggido ans Seoul. The results showed that the mean of the CES-D depression was 13.16, which falls in the moderate depression range. Substantial variables are age, level of education, marital status, employment status, monthly income, use of tobacco, self-rated general health, present menopausal status, and current sexual activity however, not the use of alcohol.

Also the results of the stepwise multiple logistic regression analysis indicated that income, present menopausal status, employment status and marital status are significant contributions to the prediction of CES-D depression scores. Among these predictors, lower salary had influenced on higher prevalence of depressive status followed by menopausal status, employment status, and marital status.

Based on this result, future studies should develop educational programs that is appropriate for Korean situation to decrease and prevent depression among Korean women and also develop more comprehensive nursing

intervention methods reflecting various predictors of women's depression.

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